

## ABSTRACT

According to embodiments of the invention, there is disclosed a computer processor architecture; and in particular a computer processor, a method of operating the same, and a computer program product that makes use of an instruction set for the computer. In one embodiment according to the invention, there is provided a computer processor, the processor comprising: a decode unit for decoding instruction packets fetched from a memory holding a sequence of instruction packets; and first and second processing channels, each channel comprising a plurality of functional units, wherein the first processing channel is capable of performing control operations and comprises a control register file having a relatively narrower bit width, and the second processing channel is capable of performing data processing operations at least one input of which is a vector and comprises a data register file having a relatively wider bit width. The decode unit is operable to detect for each instruction packet whether the instruction packet defines (i) a plurality of control instructions to be executed sequentially on the first processing channel or (ii) a plurality of instructions comprising at least one data processing instruction to be executed simultaneously on the second execution channel, and to control the first and second channels in dependence on said detection.